RUSLE

GRASSLAND "C"
EI DISTRIBUTION ZONE 114B

HAYLAND "C" FACTORS
ESTABLISHMENT YEAR

--Previous Crop (High Residue)	-- Spring Seeding - SP*	.13
	-- Summer Seeding	.15
--Previous Crop (Low Residue)	-- Spring Seeding - SP	.14
	-- Summer Seeding	.16
-- Second year of legume hay establishment		.01

ESTABLISHED

Grass	.005
Legume	.005

PASTURE "C" FACTORS

5% Bare Ground	.005
20% Bare Ground	.01
40% Bare Ground	.02

*** SP = SPRING PLOWING**

REFERENCE: "C" DEVELOPED WITH RUSLE SWCS 1.02, 5/93, ORONO, MAINE REVIEWED AND REVISED 1.95 BY JAMES CROPPER, NNTC

RUSLE I & II

Rec. 3/28/01 -G. Wessies

Turfgrass C Factor

The C factor is 0.017, with inputs shown below and based on Groton – New London, CT climate. This simulation is for 3 years, with spring planted turfgrass grown for 14 months, then fall-sown turfgrass grown for another 14 month period.

Special Notes:

Disregard "fallow" crop below. It has no effect on the C factor. It was used for the period between harvest and sowing when tillage for seedbed preparation occurs. The RUSLE model limits the number of operations one can display on a screen to 10, and the large number of mowing operations during growth of turf prevents the display of tillage operations in the turfgrass portion of the data entry screens.

The "add current crop residue" operations below are intended to simulate adding grass clippings during mowing operations.

The "potato harvest" contains the necessary effects to simulate the sod harvest operation. These effects are soil disturbance, kill crop, harvest crop and add residue. The name could have been changed to "harvest sod" but that change would not change the effects or the C factor.

Table 1. Summary of C factor for three-year simulation of turfgrass production.

crop	start date	end date	%EI	factor
fallow	4/15/1	5/1/1	2.1	0.042
turfgrass; spr seed	5/1/1	8/1/2	131.0	0.014
fallow	8/1/2	9/1/2	18.0	0.038
turfgrass; fall seed	9/1/2	4/15/4	148.9	0.017
			Rotation C Factor = 0.017	

+< file: TURFGRAS >----------+
¦ Turfgrass gaw 3/27/01_____¦
¦ Grass grown for turf in northeast.
¦ Turf crop sown throughout year
¦ and harvested in 10-16 months.

old C factors from USLE (1982 values)
0.28 – Aug. Seeded
0.45 – Oct. Seeded

Table 2. Summary of operations associated with seedbed preparation and growth of turfgrass sown in spring and fall.

crop # 1/4: fallow prev. crop: turfgrass; fall seed

--operation----------	% res. cover after op.	op. date ----date---------	next op.	SLR	%EI
chis-disk; str.pt. N	6	4/15/1	4/25/1	0.033	1.3
disk har-tandem lt N	5	4/25/1	4/25/1	0	0.0
cult;secdry-sw6-12 N	3	4/25/1	5/1/1	0.057	0.8
harrow;springtooth N	3	5/1/1	5/1/1	0	0.0

crop # 2/4: turfgrass; spr seed prev. crop: fallow

--operation----------	% res. cover after op.	op. date ----date---------	next op.	SLR	%EI
begin growth	3	5/1/1	8/1/1	0.04	31.0
add current crop res	24	8/1/1	9/1/1	0.009	18.0
add current crop res	40	9/1/1	10/1/1	0.005	13.0
add current crop res	52	10/1/1	11/1/1	0.002	8.0
add current crop res	62	11/1/1	12/1/1	0.001	8.0
add current crop res	69	12/1/1	5/1/2	0.001	22.0
add current crop res	75	5/1/2	6/1/2	0.0006	6.0
add current crop res	79	6/1/2	7/1/2	0.0006	11.0
harvester; potato	13	7/1/2	8/1/2	0.023	14.0

crop # 3/4: fallow prev. crop: turfgrass; spr seed

--operation----------	% res. cover after op.	op. date ----date---------	next op.	SLR	%EI
chis-disk; str.pt. N	7	8/1/2	8/15/2	0.027	8.4
disk har-tandem lt N	5	8/15/2	8/25/2	0.045	5.7
cult;secdry-duckft N	3	8/25/2	9/1/2	0.052	3.9
harrow;springtooth N	3	9/1/2	9/1/2	0	0.0

crop # 4/4: turfgrass; fall seed prev. crop: fallow

---operation----------	% res. cover after op.	op. date ----date---------	next op.	SLR	%EI
begin growth	3	9/1/2	12/1/2	0.051	29.0
add current crop res	24	12/1/2	6/1/3	0.009	28.0
add current crop res	39	6/1/3	7/1/3	0.002	11.0
add current crop res	51	7/1/3	8/1/3	0.001	14.0
add current crop res	61	8/1/3	9/1/3	0.0008	18.0
add current crop res	67	9/1/3	10/1/3	0.0009	13.0
add current crop res	73	10/1/3	11/1/3	0.0008	8.0
harvester; potato	12	11/1/3	4/15/4	0.026	27.9

Table 3. Crop Database File for spring-seeded and fall-seeded turfgrass.

crop: turfgrass; spr seed_ category: 1
res. @ harv. (lb/A): 450 row spacing (in): 6 plant pop. (#/A): 650000
surf. res. decomp. cons.: 0.00300 sub. res. decomp. cons.: 0.00300
res. at 30% cover (#/A): 640 at 60% cover: 1650 at 90% cover: 4100

days of growth	root mass #/Ac (in top 4")	canopy cover (%)	fall height (ft)	days of growth	root mass #/Ac (in top 4")	canopy cover (%)	fall height (ft)
0	0	0	0	180	1700	80	0.1
15	30	1	0.05	195	2000	80	0.1
30	70	20	0.1	210	2300	80	0.1
45	140	35	0.1	225	2600	80	0.1
60	210	45	0.1	240	2700	60	0.1
75	290	95	0.1	255	2700	50	0.1
90	380	80	0.1	270	2700	50	0.1
105	480	80	0.1	285	2700	50	0.1
120	600	80	0.1	300	2730	55	0.1
135	800	80	0.1	315	2760	60	0.1
150	1100	80	0.1	330	2800	70	0.1
165	1400	80	0.1	345	800	80	0.1

crop: turfgrass; fall seed category: 1
res. @ harv. (lb/A): 450 row spacing (in): 6 plant pop. (#/A): 650000
surf. res. decomp. cons.: 0.00300 sub. res. decomp. cons.: 0.00300
res. at 30% cover (#/A): 640 at 60% cover: 1650 at 90% cover: 4100

days of growth	root mass #/Ac (in top 4")	canopy cover (%)	fall height (ft)	days of growth	root mass #/Ac (in top 4")	canopy cover (%)	fall height (ft)
0	0	0	0	180	1350	50	0.1
15	30	1	0.05	195	1450	50	0.1
30	100	20	0.1	210	1600	55	0.1
45	280	35	0.1	225	1700	60	0.1
60	420	45	0.1	240	1800	80	0.1
75	760	50	0.1	255	1900	80	0.1
90	960	50	0.1	270	2000	80	0.1
105	1200	50	0.1	285	2200	80	0.1
120	1300	50	0.1	300	2400	80	0.1
135	1300	50	0.1	315	2600	80	0.1
150	1300	50	0.1	330	2800	80	0.1
165	1300	50	0.1	345	800	80	0.1

ESTIMATING CROP RESIDUE COVER

The Line Transect Method

(a) The line transect has been proven effective in estimating the percent of the ground surface covered by plant residue at any time.

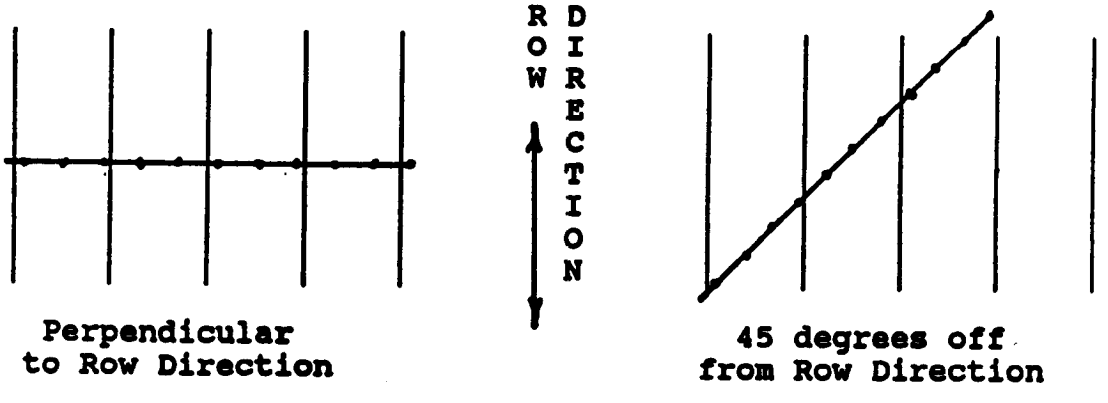
(b) Estimates of percent cover are useful for determining the impact of residue on sheet and rill erosion. They cannot be used directly for determining the impact of residue on wind erosion.

(c) Estimates of percent cover obtained using the line transect method to evaluate the impact of residue on sheet and rill erosion are most accurate when the residue is lying flat on the soil surface and evenly distributed across the field.

(d) The following is the recommended procedure for using the line transect method:

(1) Use a commercially available 50 or 100 feet long cable, tape measure, or any other line that has 100 equally spaced beads, knots, or other gradations (marks) at which to sight.

(2) (a). Select an area that is representative of the field as a whole and stretch the line out across the crop rows. The line may be oriented perpendicularly to the rows, or in a direction that is at least 45 degrees off the row direction.



Perpendicular to Row Direction

45 degrees off from Row Direction

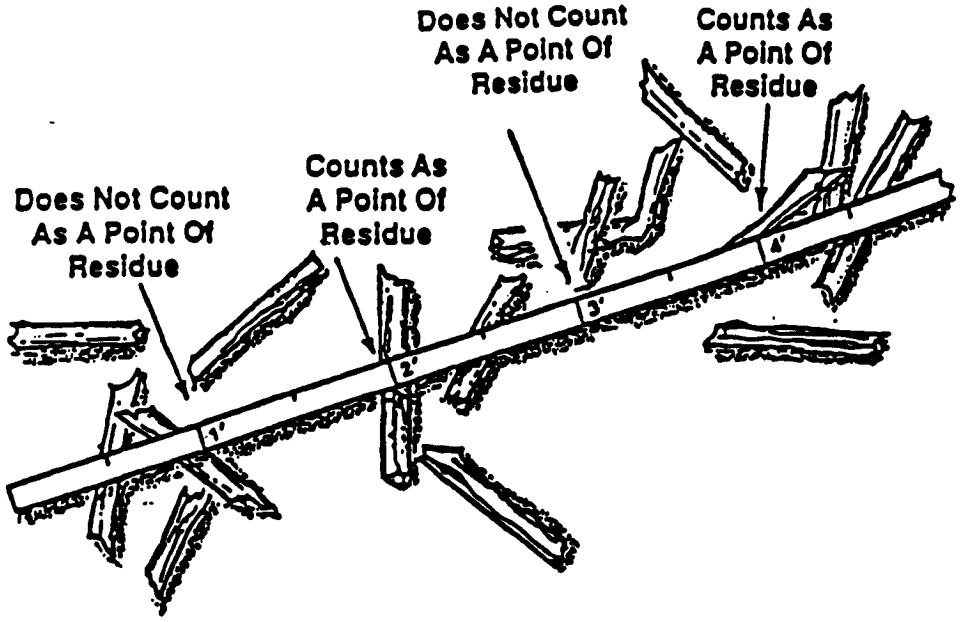
(b). The locations in the field where the line is stretched out to make measurements should be selected randomly from among areas of the field that are typical of the entire field. End rows, field borders, and parts of the field that appear different are probably not typical of the entire field and should be avoided.

(3) (a). Walk along the line stopping at each mark. Position the eye directly over the mark, and look down at it. When sighting, do not look at the entire mark. Rather, look at a single, selected point at each mark.

(b). A point has an area about like the end of a needle. On commonly used equipment, the knots, beads, or gradations have much larger areas than the end of a needle. A measurement is not based on whether or not some portion of a mark is over residue. It is based on whether or not a specific point associated with the mark is over residue.

(c). If using a commercially available beaded line, one way to accomplish the above is to select as the point of reference the place along the line where a bead begins.

(4) (a). Determine the percent residue cover by counting the number of points at each mark along the line under which residue is seen. Count only from one side of the line, and for the single, selected point at each mark. Do not move the line while counting.



(b). Count only that residue large enough to intercept rain drops. A rule of thumb is to count only residue that is 3/32 inch in diameter or larger.

(c). When using a line with 100 points, the percent residue cover is equal to the number of points under which residue is seen.

(5) (a). Three to five transects should be done in each field, using the procedure described in steps 1 through 4. Five are recommended.

(b). With five measurements, estimates of percent residue cover are accurate to within (+) or (-) 15 percent of the mean. Three measurements will give estimates accurate to within (+) or (-) 32 percent of the mean.

(c). For example, if the mean of 5 measurements was 50 percent, you could be confident (at the 95 percent confidence level) that the true mean was somewhere between 42.5 percent and 57.5 percent. For a 30 percent average based on 5 measurements, you could be confident that the true value was between 25.5 percent and 34.5 percent.

References:

(1). Laflen, J. M., M. Amemlya, and E. A. Hintz. 1981. "Measuring Crop Residue Cover", Journal of Soil and Water Conservation, Vol. 36, No. 6, pgs. 341-343.

(2). Richards, B. K., M. F. Walter, and R. E. Muck. 1984. "Variation in Line Transect Measurements of Crop Residue Cover", Journal of Soil and Water Conservation, Vol. 39, No. 1, pgs 60-61.

(3). Agricultural Research Service, National Soil Erosion Research Laboratory, West Lafayette, Indiana